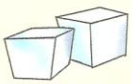
Matter states and its changes

☺ Matter exists in three states: ☺

The states of matter are

1 – Sold state

- Ice.



- Sugar.

- Iron and wood.

- Gold, silver and copper.

2 – Liquid state

- Water.

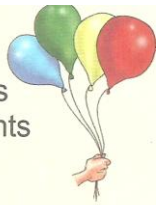
- Oil.

- Alcohol.

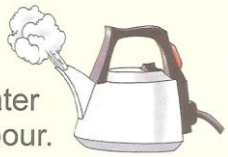
- Mercury.
- Kerosene.

3- Gaseous state

Air and its components such as :



- Oxygen.

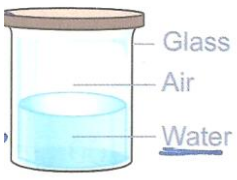


- Water vapour.
- Nitrogen.
- Carbon dioxide.

Exercise :

This glass contains three states of matter where:

- Glass represent …… state of matter
- Water represent …… state of matter.
- Air inside the glass represent…… of matter.



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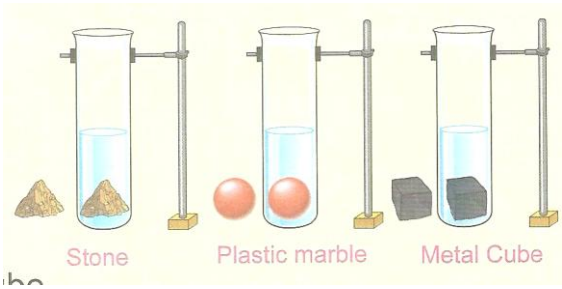
1 – SOLID STATE :

It has a definite shape and volume

Activity >> to prove that solid matter has definite shape and volume.

Steps: الخطوات

1 – put body in test tube containing water.
2 – compare between shape and volume of each body and its real shape and volume.



Observation: الملاحظة

Volume and shape of each body don't change.

Conclusion: الاستنتاج

Solids have definite shapes and volumes.

Give.Reason >>> gold and copper are solids?
Because they have definite shapes and volumes.

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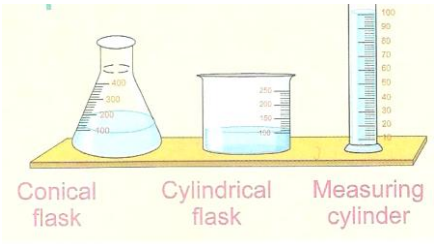
2 – LIQUID STATE :

It has defininte volume but it has indefinite shape ((it takes the shape of its container)).

Activity >>> to prove that liquid matter has a definite volume and an indefinite shape

Step:

Put 100 cm3 of water in each of the shown containers.



Observation:

Volume of water doesn't change but its shape changes .

Conclusion:

Liquids have definite volume and indefinite shapes.

G.R >>> milk is a liquid ?
Because it has a definite volume and indefinite shape.

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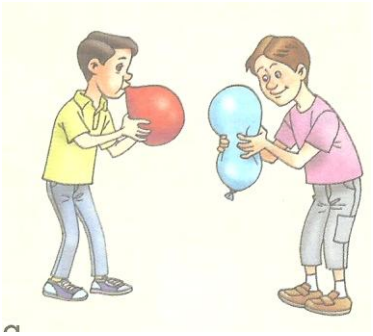
3 – GASEOUS MATTER.

It has indefinite shape and volume.

Activity >>> to prove that gaseous matter hasn't definite shape or volume.

Steps:



1 – blow air in balloon and tie it with thread.
2 – press on balloon with your hand.

Observation:

Shape and volume of air change .

Conclusion:

Gases have indefinite shape and volume.

GR >>> Air is a gaseous matter?

Because it has indefinite shape and volume.

Note :

Gaseous matter as oxygen and butagas is compressed inside cylinders, because its shape and volume is changed by changing its container.

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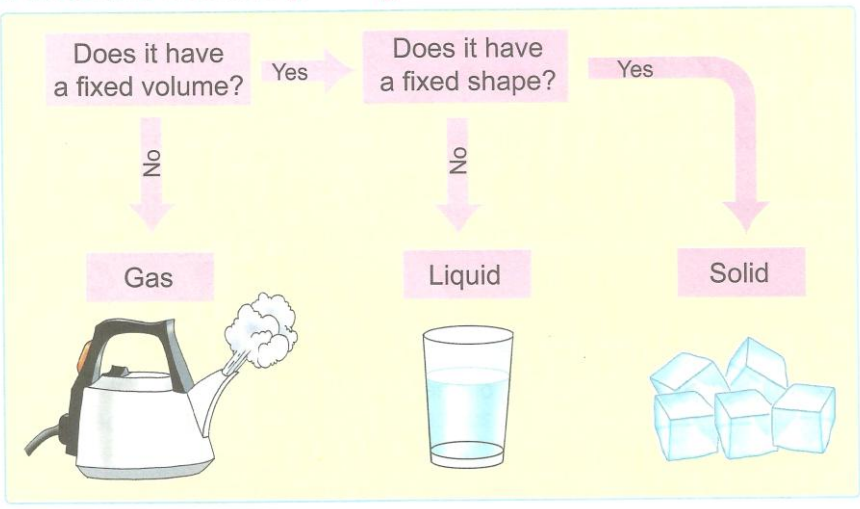
Just ask yourself this questions and you will know the state of matter!!



Question: false or right

1 – gaseous substances always take the shapes and volumes of their containers ( )
2 – liquids have definite shapes and volume. ( )

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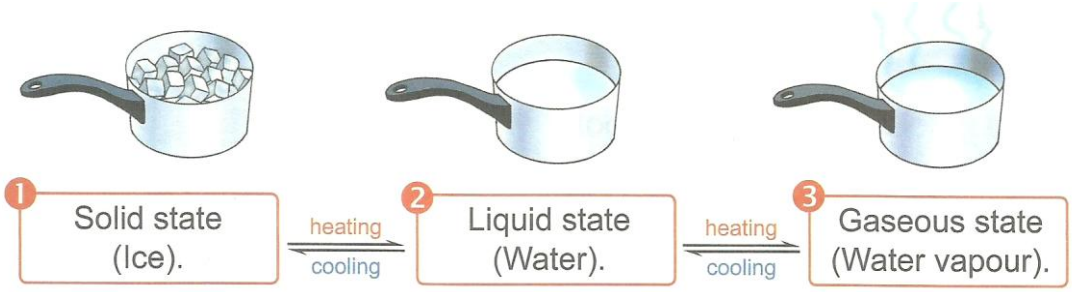
Changes of matter

- Matter exists only in one state at ordinary room temperature.
- Matter can be changed by heating or cooling.
- So, water can change from one state to another by heating or cooling.



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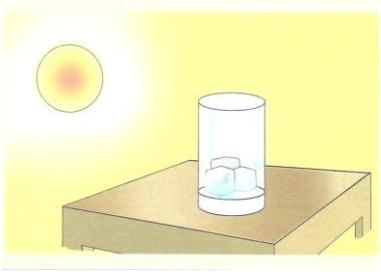
1 – Changing of water from solid state to liquid state:

When you put some ice cubes in glass cup for period of time,

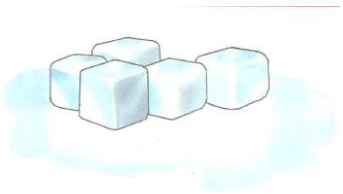
You observe that ice changes into water as it acquires heat from air.

This is a melting process.



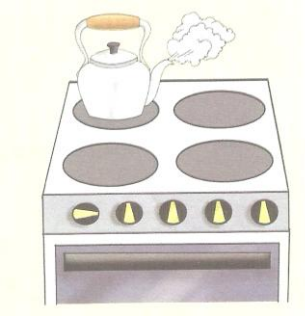
Melting :

It is the change of matter from solid state to the liquid state by heating.



2 – Changing of water from liquid state to gaseous state:

Activity >>> to show that water changes from liquid to gaseous state ((water vapour)).



Steps:
Boil an mount of water

Observation:
Water in pot decreases, because it changes into water vapour.

Conclusion:
Water changes from liquid state to gaseous state by heating , and this process known as ((evaporation))

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Evaporation:

It is the change of matter from liquid state to gaseous state by heating.

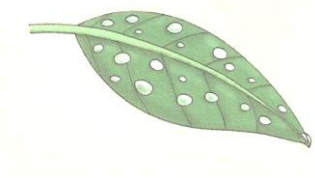
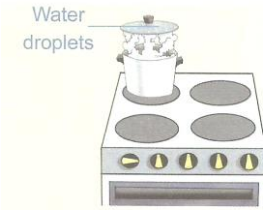
3- Changing of water from gaseous state to liquid state

This process is known as "condensation"

Condensation:

It is the change of matter from the gaseous state to liquid state by cooling.

Examples on condensation process:

1 – appearance of some water droplets on cold surfaces such as leaves of plants and cars in winter.	
2 – appearance of some water droplets on lids of cooking pans during cooking.	
3 – appearance of some water droplets on glass contains ice and left in air.	

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4- Changing of water from liquid state to solid state

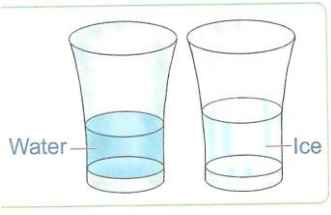
When Shady put plastic bottle of water in freezer for hours,

He observed that water changed into ice .

This process is called freezing.

Freezing :
It is the change of matter from liquid state to solid state by cooling.

Note :
Volume of water increases by freezing.



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GR >>> we shouldn't full glass bottle with water when we put in freezer?
Because volume of water increase by freezing , so it may be explode.

Exercise:

Write the scientific term:

1 – changing of matter from gaseous states to liquid state (.....)

2- transfer of water into ice (.....)

Comparison between three states of matter:

	Solids	Liquids	Gases
Volume	Dfinite	Definite	Indefinite
Shape	Definite	Indefinite	Indefinite
Examples:	Iron , stone, ice	Oil , alcohol, water	Oxygen , nitrogen , water vapour.

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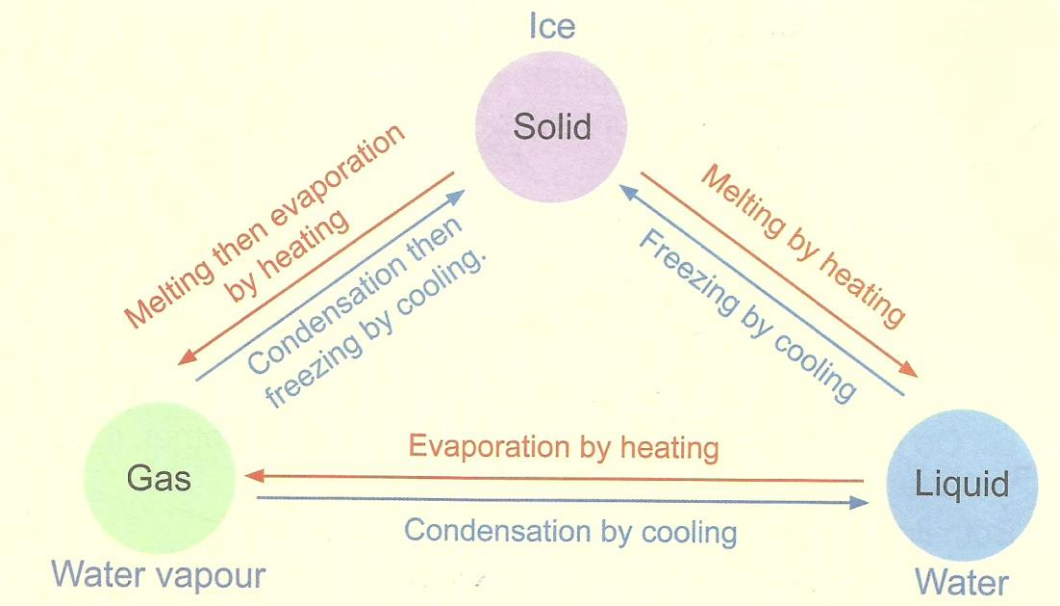
This diagram explain all the three physical states:



Glossary:

Matter states	حالة الماده		Gaseous states	الحالة الغازيه
Solid states	حاله صلبه		Mercury	الزئبق
Liquid state	حاله سائله		Water vapour	بخار الماء
Definite	محدد		Real	حقيقي
Indefinite	غير محدد		Container	وعاء
Blow	ينفخ		Tie	يربط
Thread	خيط		Press	يضغط
Cylinders	اسطوانه		Compress	يضغط
Trace	بقايا		Changing	التغير
Acquire	يكتسب		Melting	الذوبان
Boil	يغلي		Pot	إناء
Evaporation	عملية التبخير		Condensation	عملية التكثيف
Come out	يخرج		Appearance	المظهر
Lid	الغطاء		Freezing	عملية التجمد
Explode	ينفجر			

Questions on lesson 2

Complete the following statements:

1 – in the …… Matter , volume and shape doesn't change.

2 – states of matter are …… , …… and ……

3 – water is a matter in …… state, while water vapour is a matter in …… state.

4 – on transferring water from one container to another , its …… Change.

5 – matter can be pressed in case of …… state.

6 – matter changes from one state to another by the effect of …… and ……

7 – ice can change into water by ……

8 – changing of ice into water is considered a …… process.

9 – increasing temperature of water to boiling point changes water into ……

10 – water condenses if it touches a …… surface.

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Choose the correct answer:

1 – liquids take the …… Of their containers.
a. Volumes only b. shapes only c. shapes and volumes d. colors.

2 – all of these substance have definite shapes and volumes except ……
a. Iron b. water c. wood d. sugar.

3 - all of these materials have definite volumes and indefinite shapes, except ……
a. Alcohol b. oxygen c. water d. oil

4 - …… is the solid state of water.
.a. alcohol b. ice c. oxygen d. kerosene.

5 - …… matter doesn't have definite shape or volume.
a. Solid b. liquid c. gases d. all the previous.

6 – solids and liquids have definite ……
a. Shape b. volume c. shape and volume d. texture.

7 – water vapour is an example for …… state .
a. Gaseous b. liquid c. solid d. a and c.

8 – in gold industries , gold needs …… Process.
a. Melting b. condensation c. evaporation d. cooling.

9 – which of the following substances can be melted? ……
a. Water b. ice c. oil d. water vapour.

10 – on decreasing temperature of water vapour, it ……
a. Freezes. B. condenses c. melts. D. evaporates.

11 – changing the matter from liquid state to solid state accompanied with ……
a. An increasing of heat. B. a decreasing of heat .
C: constancy of heat d. an increase of mass.

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Put right √ or wrong × for each of the following:

1 – iron and wood are from liquid substances. (.....)

2 – solid substances have definite volumes and shapes (.....)

3 – condensation is the transformation of matter from liquid to gaseous state (.....)

4 – on decreasing the temperature of water vapour it condenses. (.....)

5 – appearance of some water drops on leaves is due to evaporation process (.....)

What is meant by :

1 – melting ?

.....

2 – evaporation ?

.....

3 – condensation?

.....

4 – freezing?

.....

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What happen if :

1 – when you blow air in different balloons?

.....

2 – when you put piece of ice in pan and leave it for sometime?

.....

3 – putting a bottle full of water in freezer for 24 hours?

.....

My wishes, Mr . Ibrahim Elsayed

Mr . Ibrahim Elsayed

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